Key Interfaces in the Java Executor Framework

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Learning Objectives in this Part of the Lesson

- Understand the purpose of the Java executor framework
- Recognize the features & benefits of thread pools
- Note a human known use of thread pools
- Know the Java Executor framework thread pools
- Learn the key interfaces the framework provides
Key Java Executor Framework Interfaces
The Java executor framework contains several key interfaces:

- **Executor**:
  - `execute(Runnable): void`

- **ExecutorService**:
  - `shutdown(): void`
  - `shutdownNow(): List<Runnable>`
  - `isShutdown(): boolean`
  - `isTerminated(): boolean`
  - `awaitTermination(long, TimeUnit): boolean`
  - `submit(Callable<T>)`
  - `submit(Runnable, T)`
  - `submit(Runnable)`
  - `invokeAll(Collection<? extends Callable<T>>): List<Future<T>>`
  - `invokeAny(Collection<? extends Callable<T>>)`
  - `invokeAny(Collection<? extends Callable<T>>, long, TimeUnit)`

- **ScheduledExecutorService**:
  - `schedule(Runnable, long, TimeUnit)`
  - `schedule(Callable<V>, long, TimeUnit)`
  - `scheduleAtFixedRate(Runnable, long, long, TimeUnit)`
  - `scheduleWithFixedDelay(Runnable, long, long, TimeUnit)`

See [docs.oracle.com/javase/tutorial/essential/concurrency/executors.html](https://docs.oracle.com/javase/tutorial/essential/concurrency/executors.html)
Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - **Executor**
    - Provides a means of submitting new runnable tasks for execution

See [docs.oracle.com/javase/8/docs/api/java/util/concurrent/Executors.html](docs.oracle.com/javase/8/docs/api/java/util/concurrent/Executors.html)
Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces
  - Executor
  - ExecutorService
    - Extends Executor to manage task & executor lifecycles

See docs.oracle.com/javase/8/docs/api/java/util/concurrent/ExecutorService.html
Key Java Executor Framework Interfaces

- The Java executor framework contains several key interfaces:
  - Executor
  - ExecutorService
  - ScheduledExecutorService
    - Extends ExecutorService to support future and/or periodic execution of tasks

See [docs.oracle.com/javase/8/docs/api/java/util/concurrent/ScheduledExecutorService.html](docs.oracle.com/javase/8/docs/api/java/util/concurrent/ScheduledExecutorService.html)
The Java executor framework contains several key interfaces:

- **Executor**
- **ExecutorService**
- **ScheduledExecutorService**
- **CompletionService**

- Decouples task invocation from async processing of tasks & handling of completed task results

See [docs.oracle.com/javase/8/docs/api/java/util/concurrent/CompletionService.html](docs.oracle.com/javase/8/docs/api/java/util/concurrent/CompletionService.html)
End of Key Interfaces in the Java Executor Framework